Figure 1: MNIST Handwritten Digit Dataset: http://yann.lecun.com/exdb/mnist/

1 Hints:

Let's write a new script shell script! Recall the process of creating a script:

- Open a file named 'lab04.sh' in VIM.
- On the first line writes the *shebang* i.e. '#!/bin/bash' for the bash shell.
- Save your work.
- Enter down to line number 3.
- Start writing your script!
- Save and quit.
- Run your script using 'bash lab04.sh'.

Here are some hints on some commands that you will need in this lab:

- Use the 'head' command to get the first 10 lines of a file.
- Use the 'tail' command to get the last 10 lines of a file.
- Use the 'cut' command to get specific columns of a delimited file.
- Use the 'wc' command to get the word count and number of lines in a file.
- Use the 'man' command on any of the above 4 commands to be more specific and find some options that will allow you to be more granular about what you want to do.

2 Instructions:

2.1 Setup:

First, we will set up what you will need to submit for the lab:

1. Inside your '~/Desktop' directory, create a directory named 'username_lab04'.
2. Now go into the now named 'username_lab04' directory.
3. Create a new **empty** files called 'lab04.sh'.

2.2 Writing your script:

Now you will create your lab 04 script! **Your script should do the following when you run it using 'bash lab04.sh':**

1. Print the output of 'hostname'.
2. Print the output of 'whoami'.
3. Download a file named 'mnist_condensed.csv' with the following URL: https://raw.githubusercontent.com/s7117/csce215labs/main/mnist_condensed.csv
4. List the contents of the current directory in **long** format including all. (Hint: You need an option).
5. Create a directory named 'data'.
6. Move the mnist_condensed.csv file to the 'data' directory.
7. **WITHOUT** changing directories (using 'cd') list the contents of the 'data' directory.
8. Note that if you want to access the mnist_condensed.csv inside your lab04.sh script you **MUST** prepend it with its location. That is, inside your script you should add the path before the filename: 'data/mnist_condensed.csv' or './data/mnist_condensed.csv'
9. Show the first 23 lines of the 'mnist_condensed.csv' file.
10. Show the last 34 lines of the 'mnist_condensed.csv' file.
11. Display the number of lines in the 'mnist_condensed.csv' file.
12. Get the first column of the mnist_condensed.csv.
13. Get column number 392 from mnist_condensed.csv.
14. Remove the 'data' directory and all of its contents.

2.3 Create the Output File

Now you will create the 'username_lab04.out' file! To do this, we will use what is called a redirection operator. We will learn more about this next week! Use the following command to run your lab04.sh script and redirect its output to the 'username_lab04.out' file.

```
bash ./lab04.sh > username_lab04.out
```

If done correctly you should see the output of your script inside the 'username_lab04.out' file when you view or cat it!

2.4 Tarball:

Now we will tarball our submission up for submission so your lab is all packaged up nice and neat!

1. Now, go up one directory to get out of the directory named 'username_lab04' that we created at the beginning.
2. Use the following command:

   ```
   tar -zcvf username_lab04.tar.gz username_lab04
   ```

3. If all went well when you list the files and directories in your current directory you should see that the tar command outputs the something similar to the following:

   ```
   username_lab04/
   username_lab04/lab04.sh
   username_lab04/username_lab04.out
   ```

4. If you see more than these three lines you probably didn't clean up your directories/files from the previous steps! **If you have any extra files/directories in your tarball, points may be deducted.**
5. Now you should have a nice tarball to submit called 'username_lab04.tar.gz'. Submit this to the course Dropbox website!

3 Submission:

Submit your final tarball named 'username_lab04.tar.gz' to the course Dropbox website.